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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR     | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|---|-------------|--------------------------|-----------------------------|------------------|
| 10/772,653  | 02/05/2004  | Mohammed Mahbubur Rahman | WJT08-0060<br>(JSF001-0009) | 5779             |
| 7590  | 10/06/2005  |                          | EXAMINER<br>HAM, SEUNGSOOK  |                  |
| William J. Tucker<br>14431 Goliad Dr., Box #8<br>Malakoff, TX 75148 |             |                          | ART UNIT<br>2817            | PAPER NUMBER     |

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/772,653 | <b>Applicant(s)</b><br>RAHMAN ET AL. |  |
|                              | <b>Examiner</b><br>Seungsook Ham     | <b>Art Unit</b><br>2817              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) 1-6, 11-17, 19, 20, 23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-34, 39-45, 47-49, 51, 56, 60-65, 67, 68 and 70 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/29/05</u>   | 6) <input type="checkbox"/> Other: _____                                    |

Continuation of Disposition of Claims: Claims pending in the application are 1-6,11-17,19,20,23,24,29-34,39-45,47-49,51,56,60-65,67,68 and 70.

## **DETAILED ACTION**

### ***Election/Restrictions***

The Applicant's Amendment filed on 8/31/05 has been entered. However, claims 1-6, 11-17, 19, 20, 23 and 24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species II ("or by placing a ring resonator in a different layer relative to a combline resonator"). Election was made **without** traverse in the reply filed on 2/7/05.

### ***Claim Objections***

Claims 45, 47, 51, 60, 62-65, 67 and 70 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 45, 47, 51, 60, 62-65, 67 and 70 are dependent on cancelled claims.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 40, 41, 45, 47, 48, 51, 60-65, 67, 68, and 70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 40, "further comprising the step of providing bias to said voltage tunable dielectric capacitors" lacks antecedent basis (note that the body of claim 29 does not recited "voltage tunable dielectric capacitors").

Claims 45, 47, 51, 60, 62-65, 67 and 70 are dependent on cancelled claims.

In claims 41 and 61, the examiner suggests "said biasing lines" (the first occurrence) to –said DC biasing lines—for the consistency in terminology.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 29, 30, 32-34, 42, and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Peters (US '259).

Peters (fig. 7) discloses a stripline filter comprising: first and third combline-type resonators 308a, 308b; a second resonator 306 coupled to both first and third resonators; input and output transmission lines 307a, 307b, connected to the first and third resonators, respectively; and the third and first resonators are cross coupled by a transmission line shorted on both ends 309 (the coupling electrode 309 connected to a ground electrode 303). The preamble, "A voltage-controlled tunable comb-ring type filter" in claim 29, cannot be given any patentable weight since the body of the claim does not recite such structure.

Regarding claim 49 (insofar as understood), Peters (fig. 7) also shows a metallic electrode 310a distance associated with at least one resonator 308b.

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 29, 30, 32-34, and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki et al. (US '073).

Miyazaki et al. (fig. 26) discloses a stripline filter comprising: first and third combline-type resonators 10a, 10d; a second resonator 10b, 10c coupled to both first and third resonators; input and output transmission lines 17, connected to the first and third resonators, respectively (see fig. 21, the input/output line 17 is connected to first resonator through electrode 14); and the third and first resonators are cross coupled by a transmission line shorted on both ends 19 (the electrode 16 are connected to the outer ground electrode). The preamble, "A voltage-controlled tunable comb-ring type filter" in claim 29, cannot be given any patentable weight since the body of the claim does not recite such structure.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 31, 39-41, 43-45, 47, 48, 51, 56, and 60-65, 67, 68, and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters (US '259) in view of Liang et al. (US Pat. Appl. Pub. '719) (insofar as understood).

Peters is applied as above. Peter lacks providing a ring-type resonator as the second resonator and at least one voltage-controlled variable capacitor is coupled to at a resonator.

It should be noted that providing a voltage-controlled variable capacitor coupled to a resonator/filter to tune a resonant/filter frequency is well known in the art. Liang et al. (figs. 2 and 3) discloses a ring-type resonator coupled to a voltage-controlled variable capacitor. Liang et al. (figs. 8 and 9) also shows different types of voltage-controlled variable capacitor (e.g., MEM varactors, tunable dielectric capacitor, etc.).

It would have been obvious to one of ordinary skill in the art to provide a voltage-controlled ring-type resonator of Liang et al. as the second resonator in the device of Peters since a ring-type resonator and a combine resonator are functionally equivalent, and also to tune a resonator/filter frequency as taught by Liang et al.

Claims 31, 39-41, 43-45, 47-49, 51, 56, 60-65, 67, 68 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. (US '073) in view of Liang et al. (US Pat. Appl. Pub. '719) (insofar as understood).

Miyazaki et al. is applied as above. Peter lacks providing a ring-type resonator as the second resonator and at least one voltage-controlled variable capacitor is coupled to at a resonator.

It should be noted that providing a voltage-controlled variable capacitor coupled to a resonator/filter to tune a resonant/filter frequency is well known in the art. Liang et al. (figs. 2 and 3) discloses a ring-type resonator coupled to a voltage-controlled

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variable capacitor. Liang et al. (figs. 8 and 9) also shows different types of voltage-controlled variable capacitor (e.g., MEM varactors, tunable dielectric capacitor, etc.).

It would have been obvious to one of ordinary skill in the art to provide a voltage-controlled ring-type resonator of Liang et al. as the second resonator in the device of Miyazaki et al. since a ring-type resonator and a combline resonator are functionally equivalent, and also to tune a resonant/filter frequency as taught by Liang et al.

### ***Response to Arguments***

Applicant's arguments with respect to claims 29-34, 39-45, 47-49, 51, 56, 60-65, 67, 68 and 70 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed on August 31, 2005 have been fully considered but they are not persuasive.

Regarding claims 1-6, 11-17, 19, 20, 23 and 24, these claims have been withdrawn from the further consideration since claim 1 includes non-elected Species II ("or by placing a ring resonator in a different layer relative to a combline resonator").

In response to the Applicant's argument that Peters (US '259) and Miyazaki et al. do not show "wherein at least one of said resonators includes at least one voltage tunable dielectric capacitor" and "wherein the cross coupling is realized by a transmission line shorted on both ends" (see REMARKS, p. 21, paragraphs IX and X), the examiner disagrees.

It should be noted that claim 29 does not recite "wherein at least one of said resonators includes at least one voltage tunable dielectric capacitor", thus, this



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argument is moot. Moreover, even if such limitation is considered (see 35 USC 103 rejections above), it is the examiner's position that it would have been obvious to provide a voltage tunable capacitor in the device of Peters or Miyazaki et al. to tune a resonator/filter frequency since such technique is well known in the art as shown by Liang et al. Liang et al. clearly teaches that providing a voltage tunable capacitor in a filter to reduce the manufacturing cost (see paragraph [0029]). Since the applicant failed to point out why it would not be obvious to provide a voltage tunable capacitor in the device of Peters or Miyazaki et al. in view of Liang et al., the 35 USC 103 still stands.

Regarding the limitation, "wherein the cross coupling is realized by a transmission line shorted on both ends", Peters (fig. 7) clearly shows a transmission line 309 shorted on both ends which provides a cross coupling (col. 7, line 58 – col. 8, line 4). Miyazaki et al. (fig. 26) also shows a transmission line 19 shorted on both ends 16 to provide a cross coupling (i.e., jump coupling).

Regarding claims 45, 47, 51, 60, 62-65, 67 and 70, it should be noted that they are dependent on cancelled claims. The examiner assumed that these claims are dependent on the independent claims 29 and 56.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Seungsook Hain  
Primary Examiner  
Art Unit 2817

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